Q & A

Ron Vale

Ron Vale is Professor and Chair of the Department of Cellular and Molecular Pharmacology at UCSF and Investigator with the Howard Hughes Medical Institute. His laboratory investigates the mechanisms of molecular motor proteins as well as broader cell biological questions concerning the cytoskeleton.

What turned you onto science in the first place? I had a wonderful mother (a nonscientist and former actress) who frequently took me to the Natural History Museum and Science and Technology Museum in the Los Angeles area as a young child. I loved these museums and worked at the latter as a high school student; nothing glorious — setting up displays and working cash registers, but I got to hang out at the museum! My father was a fiction writer, but he was inspired by the great questions of science. He ran a high school newspaper with Einstein's son in Zurich, and went to the great man's house to ask about the meaning of 'relativity'. Although Einstein was patient and kind, my father did not understand the answer. But he maintained an interest in cosmology and took me to UCLA extension course lectures on such subjects while I was in high school. Although they were not scientists, my parents both instilled a sense of curiosity during my upbringing.

Another turning point involved a high school counselor who helped foster my interest in biology at a crucial time. For a high school biology project, I measured circadian rhythms of leaf movements in bean plants, using a self-built kymograph and a controlled light–dark environment that I set up in my basement. I worked very hard on this project, but for some reason I got a very mediocre 'B' grade. My counselor heard about my interest, however, and contacted an emeritus professor at UCLA, Karl Hammer, who allowed me to continue work on this project in his laboratory (the big time!). That experience cemented my interest and career path in biology.

Were you not tempted to follow your father's footsteps and become a writer? I respected what my father did, especially the creativity and dedication that went into his writing. But I also appreciated the difficulty of such a profession, particularly with the uncertainty in our family finances from year to year. Moreover, much of a writer's success depends upon whims of publishers in a highly commercial marketplace (yes, even more competitive and unpredictable than scientific publishing). Science seemed like a fascinating and equally creative profession, but more secure. In addition, the value of discoveries, while perhaps not totally absolute and requiring some consensus judgment, is nevertheless a much more concrete benchmark than selling a novel.

Who is your scientific hero? My heroes are individuals whose scientific enthusiasm has remained undiminished well past 'retirement age'. As an undergraduate, I had the good fortune to work with Beatrice Sweeney, a leader in circadian rhythms and a 'dynamo'. She was doing experiments in her 60s, collecting data around the clock to analyze circadian patterns. She moved so fast around the laboratory that it was difficult to keep up with her. Even later in her career she trained herself in molecular biology, as she thought this to be an important new direction in the field. Beazy was also a dedicated educator and a wonderful mentor. I also am fortunate to have close associations with other 'ageless' scientists with remarkable insight, energy and enthusiasm: Shinya Inoue, Ed Taylor and Andrew Szent-Georgyi (who I see during my current summers at Woods Hole), as well as my former graduate student advisor Eric Shooter. These individuals set great examples for me; all scientists need role models at every stage of their career.

What is the best advice you've been given? Andrew Szent-Gyorgyi and Jim Spudich advised me to continue my work on kinesin by starting my own laboratory, rather than finishing medical school. Although I was, and still am, interested in medicine, my real love is research and it was just as well I realized this and acted on it early on.

My advice for others? It is hard precisely to plan one's career or even one's niche in biology. The best things that happened to me came from unplanned experiments, chance meetings with others and diversions from the 'career path'. So I guess I am an advocate of not being too rigid, and taking advantage of opportunities that come along. As the baseball player Yogi Berra said, "If you come to a fork in the road, take it." In terms of a general decision of choosing biology as career, not surprisingly I am an enthusiast. This is a unique time in history in which we are figuring out how biological systems work, and it is wonderful to take part in this fast moving revolution (and, as a bonus, to get paid for it).

What are your ambitions? I am happy with my present situation: the ability to investigate scientific questions with adequate funding; a fantastic group of talented young colleagues in my group; and a stimulating environment at UCSF. But none of these benefits should be taken for granted: they are privileges, gained and maintained by hard work and dedication. Thus, an 'ambition' of mine is just to continue to enjoy the excellent situation that I am fortunate enough to be in now. In the right environment, good science will emerge, often in unpredictable ways. A second ambition is to make some impact on the careers of younger scientists, in my lab and elsewhere. Co-directing the Physiology Course at the Marine Biology Laboratory with Tim Mitchison has reinforced my appreciation that this is a worthy ambition.

What do you see as challenges for training the next generation of scientists? Career paths and scientific training in the United States probably need to evolve to meet current challenges. It is generally agreed that alternative (nonacademic) careers in science should be bolstered, but graduate school and postdoctoral training are getting longer as the bar for achieving a 'successful story' for publication becomes ever higher. Technology development also is acknowledged to be a driver for the biological sciences, but individuals with such interests do not have clear career paths and grant support in the academic system. We also need to consider ways of supporting young academic scientists who are willing to try creative and risky experiments, rather than a safe and guaranteed trail of papers. I am not sure that I have answers to these issues, but I think that it is time to try some 'experiments' in education and not be complacent with the status quo that has been in operation for decades.

Do you have any strong views on journals and the peer review system? We need to evolve a path away from the current journal hierarchy. Three journals are glorified for promotions and grants (and you know to which ones I am referring). But there is much more good science than can be accommodated by these journals. This hierarchy and excess demand adds to the stress on graduate students and postdoctoral fellows who feel that they need a publication in one of these 'big' journals to advance their careers. However, the problem is 'ours' as a scientific community, not the journals. We — academic institutions and granting agencies — need a better system for recognizing good science and good people and become less reliant on a 'three journal filtering system'.

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Feature

On the trail of Nepal's flora

One of the world's richest and most diverse array of plants is undergoing a new survey similar to those carried out by many nineteenth-century botanists — but with a twist. New technology should help create a twenty-first century flora to help combat the unprecedented threats from human pressures and climate change. **Nigel Williams** reports.

A hi-tech project led by a team of Edinburgh botanists gets under way this month with the aim of helping Nepal develop a detailed catalogue of its extraordinarily diverse but threatened flora. The project also involves collecting plant specimens and seeds to be held both in Nepal and the UK as a source of material protected from the increasingly hostile natural environment that may prove crucial in any future conservation and reintroduction plans.

David Knott, curator of Edinburgh's Dawyck Botanic Garden, and a member of the team, has just returned from a visit to Nepal. He said final tests had been carried out to ensure that the team were fully equipped and trained to undergo the first collections using the best practices. "It's a twenty-first century project," he says. The team will be using Global Positioning Equipment to define the location and altitude of every specimen recorded, he says. The team will also carry laptop computers, to record any botanical or other notes to accompany specimens, and digital cameras. "We shall be carrying generators to power all this equipment," he says.

Back in Nepal, Knott's colleagues Mark Watson and Colin Pendry have spent much of the last two years training 16 local botanists in Nepal. Last month they began putting the trainees through their final paces, testing them on everything from herbarium management to plant drying, before starting the project in earnest. They are expecting the mammoth undertaking to take them 15 years, but when it is finished the new floral record will be the first official account of Nepal's rich plant environment and an invaluable aid for conservationists.

Although it takes up only 0.09 per cent of the planet's land surface, Nepal comprises everything from jungles to frozen Himalayan mountains and is estimated to be home to

Vital guides: Namgal Sherpa, shows one of the blue poppies he collected from a crag in Nepal. (Photograph: David Knott, Edinburgh Botanic Gardens.)